WE CLAIM:

1. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 1 and 2.

2. An isolated polynucleotide encoding a polypeptide with biological activity, said polynucleotide having greater than 98% sequence identity with the polynucleotide of SEQ ID NO: 2.

3. The polynucleotide encoding the polypeptide of SEQ ID NO: 3.

4. A polynucleotide encoding a polypeptide selected from the group consisting of SEQ ID NO: 3-7 and 11.

5. The polynucleotide of claim 1 which is a DNA sequence.

6. An isolated polynucleotide which comprises the complement of the polynucleotide of claim 1.

7. A vector comprising the polynucleotide of claim 1.

8. An expression vector comprising the polynucleotide of claim 1.

9. A host cell genetically engineered to comprise the polynucleotide of claim 1.

10. A host cell genetically engineered to comprise the polynucleotide of claim 1 operatively associated with a regulatory sequence that modulates expression of the polynucleotide in the host cell.

11. An isolated polypeptide, wherein the polypeptide is selected from the group consisting of a polypeptide encoded by any one of the polynucleotides of claim 1.

12. A composition comprising the polypeptide of claim 11 and a carrier.

13. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of SEQ ID NO: 3-7 and 11, or immunogenic fragment thereof.

14. An isolated polypeptide comprising an amino acid sequence which is at least 98% identical to the amino acid sequence of SEQ ID NO: 3, or extracellular portion thereof.

15. An antibody that specifically binds to SEQ ID NO: 3, or immunogenic fragment thereof.

16. An antibody that specifically binds to SEQ ID NO: 11.

17. The antibody of claim 15 or 16, wherein said antibody is a monoclonal antibody or antibody fragment thereof.

18. The antibody of claim 16, wherein said antibody is a polyclonal antibody or antibody fragment thereof.

19. The antibody of claim 16, wherein said antibody is 10458a.

20. A method for detecting the polynucleotide of claim 1 in a sample, comprising:

a) contacting the sample with a compound that binds to and forms a complex with the polynucleotide of claim 1 for a period sufficient to form a complex; and

b) detecting the complex, so that if a complex is detected, the polynucleotide of claim 1 is detected.

21. A method for detecting the polynucleotide of claim 1 in a sample, comprising:

a) contacting the sample under stringent hybridization conditions with nucleic acid primers that anneal to the polynucleotide of claim 1 under such conditions;

b) amplifying a product comprising at least a portion of the polynucleotide of claim 1; and

c) detecting said product and thereby the polynucleotide of claim 1 in the sample.

22. The method of claim 21, wherein the polynucleotide is an RNA molecule and the method further comprises reverse transcribing an annealed RNA molecule into a cDNA polynucleotide.

23. A method for detecting the polypeptide of claim 11 in a sample, comprising:

a) contacting the sample with a compound that binds to and forms a complex with the polypeptide under conditions and for a period sufficient to form the complex; and

b) detecting formation of the complex, so that if a complex formation is detected, the polypeptide of claim 11 is detected.

24. A method for identifying a compound that binds to the polypeptide of claim 11, comprising:

a) contacting the compound with the polypeptide of claim 11 under conditions sufficient to form a polypeptide/compound complex; and

b) detecting the complex, so that if the polypeptide/compound complex is detected, a compound that binds to the polypeptide of claim 11 is identified.

25. A method for identifying a compound that binds to the polypeptide of claim 11, comprising:

a) contacting the compound with the polypeptide of claim 11, in a cell, under conditions sufficient to form a polypeptide/compound complex, wherein the complex drives expression of a reporter gene sequence in the cell; and

b) detecting the complex by detecting reporter gene sequence expression, so that if the polypeptide/compound complex is detected, a compound that binds to the polypeptide of claim 11 is identified.

26. A method of producing the polypeptide of claim 11, comprising:

a) culturing a host cell comprising a polynucleotide sequence selected form the group consisting of a polynucleotide sequence of SEQ ID NO: 1, 2, and complementary sequences thereof, under conditions sufficient to express the polypeptide in said cell; and

b) isolating the polypeptide from the cell culture or cells of step (a).

27. A pharmaceutical composition comprising an anti-KIRHyl antibody specific for cells that cause cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, wherein said antibody specifically binds to a polypeptide having an amino acid sequence of SEQ ID. NO: 3 or immunogenic fragment thereof.

28. The pharmaceutical composition of claim 27, wherein said antibody is a monoclonal anti-KIRHy1 antibody or antigen-binding fragment thereof.

29. The pharmaceutical composition of claim 27, wherein said antibody is labeled with a radioisotope.

30. The pharmaceutical composition of claim 27, wherein said antibody is labeled with a toxin.

31. The pharmaceutical composition of claim 27, wherein said antibody is administered in an amount effective to kill or inhibit the growth of cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma.

32. A method of targeting KIRHy1 protein on cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a composition to said cells in an amount effective to target said KIRHy1-expressing cells, wherein said composition is an anti-KIRHy1 antibody that specifically binds to a polypeptide having an amino acid sequence of SEQ ID NO: 3 or immunogenic fragment thereof.

33. A method of killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell

lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a composition to said cells in an amount effective to kill or inhibit the growth of said cancer cells, wherein said composition is an anti-KIRHyl antibody that specifically binds to a polypeptide having an amino acid sequence of SEQ ID. NO: 3 or immunogenic fragment thereof.

34. A method of killing or inhibiting the growth of KIRHyl-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a compound to said cells in an amount effective to kill or inhibit the growth of said cancer cells, wherein said compound comprises a KIRHyl antigen.

35. A method of killing or inhibiting the growth of KIRHyl-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a composition to said cells in an amount effective to kill or inhibit the growth of said cancer cells, wherein said composition comprises a nucleic encoding KIRHyl, or immunogenic fragment thereof, within a recombinant vector.

36. A method of killing or inhibiting the growth of KIRHyl-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular

lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a composition to said cells in an amount effective to kill or inhibit the growth of said cancer cells, wherein said composition comprises an antigen-presenting cell comprising a nucleic acid encoding KIRHy1, or immunogenic fragment thereof, within a recombinant vector.

37. A method of killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a composition to said cells in an amount effective to kill or inhibit the growth of said cancer cells, wherein said composition comprises a small molecule that specifically binds to a polypeptide having an amino acid sequence of SEQ ID NO: 3 or immunogenic fragment thereof.

38. A method of killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the step of administering a composition to said cells in an amount effective to kill or inhibit the growth of said cancer cells, wherein said composition comprises a non-KIRHy1 polypeptide that specifically binds to a polypeptide having an amino acid sequence of SEQ ID NO: 3 or immunogenic fragment thereof.

39. The method according to any one of claims 32-38, wherein said cells are contacted with as second therapeutic agent.

40. The method according to claim 32 or 33, wherein said anti-KIRHyl antibody composition is administered in an amount effective to achieve a dosage range from about 0.1 to about 10 mg/kg body weight.

41. The method according to any one of claims 32-38, wherein said pharmaceutical composition is administered in a sterile preparation together with a pharmaceutically acceptable carrier.

42. A method of diagnosing cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the steps of:

a) detecting or measuring the expression of KIRHyl protein on a cell; and

b) comparing said expression to a standard indicative of cancer.

43. A method of diagnosing cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, comprising the steps of:

a) detecting or measuring the expression of KIRHyl protein on a cell; and

b) comparing said expression to normal tissue.

44. The method according to claim 42 or 43, wherein said expression is KIRHyl mRNA expression.

45. The method according to claim 42 or 43, wherein said expression is detected or measured using anti-KIRHy1 antibodies.

46. Use of an anti-KIRHy1 antibody in preparation of a medicament for killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma, wherein said antibody specifically binds to a polypeptide having the amino acid sequence of SEQ ID NO: 3 or immunogenic fragment thereof.

47. Use of a KIRHy1 antigen in preparation of a medicament for killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma.

48. Use of a nucleic acid encoding KIRHy1 or immunogenic fragment thereof, within a recombinant vector, in preparation of a medicament for killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma.

49. Use of an antigen-presenting cell comprising a nucleic acid encoding KIRHy1 or immunogenic fragment thereof, within a recombinant vector, in preparation

of a medicament for killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma.

50. Use of small molecule that specifically binds to a polypeptide having an amino acid sequence of SEQ ID NO: 3 or immunogenic fragment thereof, in preparation of a medicament for killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma.

51. Use of non-KIRHy1 polypeptide that specifically binds to a polypeptide having an amino acid sequence of SEQ ID NO: 3 or immunogenic fragment thereof, in preparation of a medicament for killing or inhibiting the growth of KIRHy1-expressing cells that cause a cancer selected from the group consisting of acute monocytic leukemia, acute myeloid leukemia, acute myelogenous leukemia, anaplastic large T cell lymphoma, B cell lymphoma, chronic myelogenous leukemia, diffuse large B cell lymphoma, follicular lymphoma, histiocytic lymphoma, Hodgkin's lymphoma, large B cell lymphoma, myeloma, non-Hodgkin's lymphoma, and plasmacytoma.